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ABSTRACT

Technicians and scientists seem to have lost their ability to communicate across specializations and with the general public. A study was conducted at McDonnell Douglas Corporation, in Missouri, to assess differences in communicative ability among accountants and computer programmers. The present study sought to determine the effects of a liberal arts education on communicative ability, i.e., whether courses in English and literature affected the communicative ability of accountants and computer programs. McDonnell Douglas Corporation provided their employee samples of accountants and computer programmers for the study, while Southern Illinois University's graduate school of arts and sciences provided the computer science and literature student samples. The Truell Comm Style instrument was administered to each of these four groups to measure the analytical, affiliative, conceptual, and activative characteristics of the respondents' communication styles. The primary communication style of the accountants, computer programmers, and computer science graduate students was analytical, while the primary style of the English/literature graduate students was conceptual. Accountants and computer programmers who studied more than three courses in English/literature showed higher conceptual ability. A general education, with copious amounts of liberal arts courses should be the central core of education, with a thoughtful connectedness of attached occupational courses. (AYC)

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Humanizing Occupational Education: Outcomes

Presentation to:

Academic Affairs Administrators

ACAFAD
Midwest Conference
St. Louis, Missouri

November 30 - December 2, 1989

BY:

HANS J. KUSS

JC 890 562

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FOREWORD

My presentation today is going to focus on the effects of liberal arts education in the workplace and a little philosophy. Since what I have to say will probably make more sense if it also includes some autobiographical notes, let me start with my professional background. I spent about fourteen years in industry as a programmer/analyst, systems analyst, director, and vice president of computing resources. I taught computer science for seven years at the post-secondary level. My interest in the liberal arts stems from having heard and observed that the computer scientist, computer programmer, and computer technician cannot communicate. They talk gibberish. They use acronyms and technical jargon which means little or nothing to others of a different specialization.

As a former computer professional I found myself in dialogue with others who communicated different things. In addition, I hold and am active in a number of civic organizations and found that I was, when I thought about, communicating technical specifications rather than humanistic concerns.

On many occasions, while in industry, I found myself attending communications training classes. I always thought that

I was invited to attend these educational courses because my employers thought highly of me. What I didn't know was that my employers felt that I could be more productive if I were able to communicate better with the user community in the organization.

Somehow, I found myself, in my middle twenties, reading literature; good literature. You know the stuff - Twain, Steinbeck, Bellows, Bolle, Thoreau, etc. I'll be doggone if I didn't take a liking to this stuff. It was more interesting for me to learn about human nature (because I dealt with it daily) than dealing with the nature of microchips. The latter became more of a hobby. The former consumed me because the study of human nature is, quite simply, fun.

In light of the recent alarming trends in our nation's educational institutions and the rhetoric on the usefulness of liberal arts, going back to basics, etc., this research addresses results. That is, it is not enough to state that the liberal arts are good and needed. Our students want to know why?

We academic administrators must provide more than rhetoric about the goodness of liberal arts, we must show proof. Accordingly, my research clearly demonstrates the outcomes of liberal arts education on occupational workers.

Hans J. Kuss, Ph.D.

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Humanizing Occupational Education: Outcomes

By

Hans J. Kuss

Recognizing the recent rhetoric about "liberal arts", the lack of it or the necessity of it in the curriculum, the author has attempted to assess the outcomes of various professionals to determine whether liberal arts education provides value to their communicative ability.

Communication between people has long been a topic of discussion and examination among rhetoricians, philosophers, and a host of educators who view human interaction as necessary for the progress of mankind. The "information age" with its technological advances has created an information explosion, not only in terms of information available to the public, but in new terminology within specializations directed at unspecialized publics. The technical specialist is often interacting with the non-technical worker where the former may communicate via technical language, often incomprehensible, to the latter. Consequently, the great and growing mass of technical information may produce pressures and frustrations for human interaction, especially on the part of a person receiving communication couched in technical language with which he/she is unfamiliar (LaBarbara, 1983).

These pressures are compounded by the division between what C.P. Snow (1959) three decades ago called the "two cultures" of academic life - those adhering to a "scientific-technological" world-view versus those identifying themselves as "humanists." While this division may allow the respective camps to meet the

demands of specialization required by the various disciplines, by the bureaucratic organization of a university, or by an industrial concern, it also has made the impossibility of communication a growing possibility. That is, as specialization requires its practitioners to engulf themselves in the cryptic languages of technology, mathematics, philosophy, literary history, and so on, these specializers develop a trained tendency to communicate their acquired knowledge to others via these cryptic languages.

This "problem of communication," according to Bruce Watkins and Roy Meader (1979) "is aggravated by the fact that the demands of specialization often leave no energy or interest for the intellectual fertilization derived from exploring other fields and cultures." Compounding this problem is a notion held by technicians that their terminology is "normal" and understood by others (Zientara, 1983). As a result, the technicians, specifically computing technicians, do not insist on clear and concise communication (Roman, 1982).

Root and Trent (1977) claimed that scientists and technicians must learn to communicate due to the increasing public interest in the use of technology. Their statement carried a strong implication that scientists and technicians cannot communicate to the non-scientific and non-technical public. It is a "commonly accepted fact that people in the scientific and technical disciplines need help with communication," reported Stevenson (1977).

Much of the technical and scientific terminology stems comes from our educational institutions. The educational core curriculum of the "hard sciences" deals with objects, things, and problems. Liberal arts, on the other hand, deals with the meaning (to human beings) of objects, things and problems. Thus, people are the central focus of the liberal arts.

Students graduating out of these respective educational programs enter the marketplace attempting to communicate an inherent value system to the public which may very well create communications incongruence. Communications incongruence stems from an orientation to values in the minds of educators, technicians, and non-technical publics (Kuss, 1984). Thus, technicians and scientists have lost their ability to communicate across specializations because values influence their orientation toward life. Therefore, a reasonably common set of values is necessary; otherwise society tends to become fractionated (Kuss, 1984).

Academic programs are "specialized." In addition, science and technical programs make up the majority of the enrollment at most colleges and universities. Career, occupational or vocational education, is the banner followed by students. The educational value system of students is translated into the (money) value of a job. But once on the job, employers require more than just technical skills. Employers require communication abilities. At the very top of the organizational ladder, management requires conceptual skills. George Truell (1978) has

determined that the higher one moves in an organization the more conceptual one's ability must become.

Purpose

The intent of this study was to determine if liberal arts education, or the lack of it, reflects a particular communicative style. The original study at McDonnell Douglas Corporation (St.Louis, Missouri) addressed this issue. In addition, the original study measured a number of additional demographic variables of the groups studied (e.g. gender, age, educational level, parental education, etc.), but the purpose of this study is to address only the effects of liberal arts education in occupational programs. Therefore, the specific research questions were:

1. Is there a difference in communicative ability between occupational groups?
2. Does the amount of liberal arts education, specifically courses in English and Literature, result in better communicative ability of accountants?
3. Does the amount of liberal arts education, specifically courses in English and Literature, result in better communicative ability of computer programmers?

Consequently, null hypotheses (Ho) were developed to address these research questions:

Ho1. There is no difference in communicative ability between accountants, computer technicians, computer science graduate students, and English/Literature graduate

students.

Ho2. There is no difference in communicative ability resulting from the amount of English/Literature courses studied by accountants.

Ho3. There is no difference in communicative ability resulting from the amount of English/Literature courses studied by computer programmers.

Method

Four groups were included in this study from various backgrounds. McDonnell Douglas Corporation provided two groups of employees. Southern Illinois University's graduate school of Arts and Sciences provided two groups. There were 123 subjects in the study.

Population

The McDonnel Douglas employees consisted of two groups; accountants and computer programmers. Southern Illinois University graduate students in computer science and English/Literature represented the remaining two groups.

Instrumentation

The Truell Comm Style instrument was administered to each group in the study. The Truell Comm Style instrument measures four communicative characteristics:

1. Analytical
2. Affiliative
3. Conceptual
4. Activative

Since the Truell Comm Style (Jungian type) instrument is an extrapolation of the Briggs-Myers instrument its validity was assumed, albeit, this may be a limitation of this study. However, McDonnel Douglas administered the Wilson instrument as well which measures the same characteristics, (e.g. analytical, amiable, expressive, driver). The Harvard Human Resources instrument, as well, measures similar characteristics consisting of procedural, supportive, innovative, and opportunistic communicative styles.

Results

Analysis of Variance (ANOVA) was used to statistically treat data. Table 1 summarizes the results and reflects the Mean scores and significance values. Three coefficients were statically significant at the $p > .05$ level. The MEAN scores which are underlined (Table 1) reflect the primary communicative style of the group.

Table 1
Communicative Styles Among Groups

Profession	ANAL	AFFI	CONC	ACTI
Accountants	<u>23.4</u>	27.3	25.2	24.1
Computer Progrs	<u>21.7</u>	27.5	26.9	23.9
Eng/Lit grads	27.9	23.7	<u>23.6</u>	24.2
Comp/Sc grads	<u>22.0</u>	26.6	25.3	26.8
	*	*	*	

* $p > .05$

The first hypothesis (Ho1) was developed to ascertain if there was a significant difference in communicative styles

between the different groups studied. Statistical treatment yielded a significant p value between groups. Therefore, the first hypothesis (Ho1) was rejected.

Table 2 summarizes the Mean scores of Accountants based on the amount of English/Literature courses studied.

Table 2
Communicative styles of Accountants
based on the number of
English/Literature courses studied

Amount of Courses Studied	ANAL	AFFI	CONC	ACTI
Less than 4	21.9	26.8	27.3	23.9
More than 3	21.4	28.6	24.9	24.1

The second hypothesis (H02) was developed to assess the relationship of the amount of liberal arts courses, specifically, English/Literature courses studied of Group 2 (Accountants). Analysis of variance yielded no significant p value. Therefore, the second hypothesis (Ho2) was accepted.

Table 3 summarizes the communicative styles of Computer Programmers and the amount of English/Literature courses studied by this group.

Table 3
Communicative styles of Computer Programmers
based on the number of
English/Literature courses studied

Amount of Courses Studied	ANAL	AFFI	CONC	ACTI
Less than 4	23.5	27.0	25.3	24.4
More than 3	23.6	28.3	24.8	23.1

The third hypothesis (Ho3) was developed to assess the effects English/Literature study on communicative styles of Computer Programmers. No significant p value resulted and therefore this hypothesis is accepted.

Conclusions and Recommendations

It significant to note the underlined Mean scores, indicative of primary communicative styles of each group, which shows a distinctly lower score for English/Literature graduate students in conceptual communicative ability. This is also true in Table 2 and Table 3 for Accountants and Computer Programmers, albeit, no significant p value resulted. However, the work environment of accountants and computer programmers may determine a certain communicative style and therefore result in the inconsistency of conceptual communicative styles significantly demonstrated in Table 1.

It is important to note that English/Literature graduate students obviously would have higher conceptual ability because they engage in many more liberal arts courses. Those accountants and computer programmers who did study more than three courses in English/Literature did have higher conceptual ability, abilities required of upper level management employees.

It is recommended that further studies be done with different instruments to determine the communicative abilities of workers. Upon determining these abilities we educators must focus on developing curricula to address people skills required by organizations.

Implications

The cost to industry and consequently society due to ineffective communication has been demonstrated by a number of research studies. For example, communications training has resulted in 400% productivity increase at the IBM corporation (Mollen, 1980). McDonnell Douglas affords its employees approximately 200 hours (per employee) annually for educational purposes. The majority of educational programming at McDonnell Douglas consists of communications training (e.g. listening, writing, basic skills) and technical courses (Kuss, 1984). The cost to McDonnell Douglas for educating its workforce and the consequent cost to society is astronomical. In fact, industry spends nearly 30 billion dollars annually to educate its workforce (Chisman, 1989).

Curricula must address future organizational requirements. Academic programs must clearly reflect the connectedness of things. That is, academic programs currently are developed around occupational requirements. Occupational programs have a technical core which is central to specific academic programs. General education courses are attached here and there with little meaning or support toward that central core. This researcher suggests that general education, with copious amounts of liberal arts courses, ought to be the central core with thoughtful connectedness of occupational courses attached to that central core. Such a central core will develop more than just skilled workers - it will develop competent workers.

The Shared Vision Task Force of the American Association of Community and Junior Colleges (AACJC) has studied the integration of the humanities into associate degree occupational programs extensively (1988). Their suggestions on curricula issues are supported by this research. In addition to their report, such curricula would decrease the organizational costs of educating employees in communications skills. Technical skills training will continue because technology will continue to change. An obvious point can be made. Technology will continue to change at a faster pace than communications between people. Therefore, our focus ought to be on something broader - the development of the mind.

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